ABSTRACT OF THE DISCLOSURE

It is an object of the present invention to provide a multi-function machine tool which makes it possible to machine helical grooves of diverse shapes in a workpiece using an all-purpose multi-function machine tool, and a machining method of this multi-function machine tool.

The multi-function machine tool of the present invention has a tool rest main body which is disposed movably relative to the main spindle of the machine tool in a first linear direction parallel to the axial line of the main spindle and a second linear direction perpendicular to the axial line of the main spindle, a turning tool rest 72 which is disposed so that this turning tool rest can turn relative to the tool rest main body about a turning axis 73 oriented in a direction that is perpendicular to the first and second linear directions, and control means which control the rotational motion of the main spindle, the turning motion of the turning tool rest about the turning axis, and the relative motion of the tool rest main body. Furthermore, the control means can cause the turning tool rest to perform a turning motion about an arbitrary position that differs from the position of the turning axis by concurrently and synchronously causing a turning motion of the turning tool rest about the turning axis, and a circular-arc motion based on the relative motion of the tool rest main body in the first linear direction and second linear direction.